Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-22. (Canceled)

Claim 23. (New) A composite powder with a matrix domain structure, comprising:

- a matrix of a metal oxide that is present in the composite powder in the form of three-dimensional aggregates that have at least in one dimension a diameter of not more than 250 nm,
- domains that consist of metal oxides and/or noble metals in said matrix of an individual metal oxide, wherein the domains of nanoscale dimensions consist of:
  - at least two metal oxides or
  - at least two noble metals or
  - a mixture of at least one metal oxide and at least one noble metal, and
- the composite powder has a volume-specific surface of 60 to 1200 m^2/cm^3 and exists as a matrix/domain structure.

Claim 24. (New) The composite powder according to claim 23, wherein an individual domain contains one or more metal oxides and/or noble metals.

Claim 25. (New) The composite powder according to claim 23, wherein the matrix and the domains are present in an amorphous or crystalline form.

Claim 26. (New) The composite powder according to claim 23, wherein the domains have a diameter ranging from 2 to 50 nm.

Claim 27. (New) The composite powder according to claim 23, wherein the powder has a volume-specific surface ranging from 100 to 800 g/cm^3.

Claim 28. (New) The composite powder according to claim 23, wherein the domains are enclosed by the matrix.

Claim 29. (New) The composite powder according to claim 23, wherein, in the composite powder, the ratio of the total number of domains to the matrix on a weight basis ranges from 1:99 to 90:10.

Claim 30. (New) The composite powder according to claim 23, wherein the oxides of the matrix and the domains are selected from the group consisting of Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, Ba, Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Ni, Cu, Ag, Zn, Cd, Hg, B, Al, Ga, In, Te, Se, Tl, Si, Ge, Sn, Pb, P, As, Sb or Bi.

Claim 31. (New) The composite powder according to claim 23, wherein the domains comprise at least one noble metal selected from the group consisting of Au, Pt, Rh, Pd, Pd, Ru, Ir, Ag, Hg, Os or Re.

Claim 32. (New) A composite powder having the matrix domain structure of Claim 23, wherein the matrix is of silicon dioxide and the domains consist of indium oxide, tin oxide and/or mixed metal oxides of indium and tin, wherein the amount of indium oxide, calculated as In_2O_3, relative to the sum of the amounts of indium oxide and tin oxide, calculated as SnO_2, ranges from 80 to 98 wt %, and the amount of silicon dioxide, relative to the sum of the amounts of silicon dioxide, indium oxide and tin oxide ranges from 10 to 99 wt %.

Claim 33. (New) A composite powder having the matrix domain structure of Claim 23, wherein the matrix is silicon dioxide and the domains consist of manganese oxide, iron oxide and/or mixed metal oxides of iron/manganese, wherein the amount of iron oxide, calculated as Fe_2O_3, relative to the sum of the amounts of iron oxide and manganese oxide, calculated as MnO, ranges from 36 to 99 wt %, and the amount of silicon dioxide, relative to the sum of the amounts of silicon dioxide, iron oxide and manganese oxide ranges from 10 to 99 wt %.

Claim 34. (New) A composite powder having the matrix domain structure of Claim 23, wherein the matrix is silicon dioxide and the domains consist of manganese oxide, iron oxide, zinc oxide and/or mixed metal oxides of iron/manganese or iron/zinc or manganese/zinc, wherein the amount of iron oxide, calculated as Fe_2O_3, ranges from 32 to 98 wt %, manganese

oxide, calculated as MnO, ranges from 1 to 64 wt %, and the amount of zinc oxide, calculated as ZnO, ranges from 1 to 67 wt %, in each case is based on the sum of the amounts of iron oxide, manganese oxide and zinc oxide, and the amount of silicon dioxide, relative to the sum of the amounts of silicon dioxide, iron oxide, manganese oxide and zinc oxide, ranges from 10 to 99 wt %.

Claim 35. (New) The composite powder according to claim 23, wherein the domains have a mixed metal oxide structure in an amount of at least 80 %.

Claim 36. (New) A process, comprising:

mixing precursor compounds of the oxides of a matrix oxide and oxides of domain metal oxides in relative amounts that correspond to the ratio of metal oxides in a desired composite metal oxide powder;

subjecting the combined metal precursor compounds to a gas mixture comprised of a combustible gas and oxygen to reaction in a reactor consisting of a combustion zone and a reaction zone;

cooling the hot gases and the solid product obtained; and

separating the solid composite metal oxide powder product from the cooled gases.

Claim 37. (New) The process according to claim 36, wherein the solid composite metal oxide powder product is subjected to purification by a heat treatment by gases moistened with water vapor.

Claim 38. (New) The process according to claim 36, wherein the metal precursor compounds are conveyed to the reactor in the form of aerosols and/or vapors.

Claim 39. (New) The process according to claim 38, wherein the aerosols of the metal precursor compounds are produced separately or jointly.

Claim 40. (New) The process according to claim 39, wherein the aerosols of the metal precursor compounds are formed from liquids, dispersions and emulsions containing the metal precursor compounds in a gaseous atmosphere as well as from pulverulent solids aerosolized in a gaseous atmosphere.

Claim 41. (New) The process according to claim 39, wherein the aerosols of the metal precursor compounds are formed by ultrasonic nebulization or by means of single-product or multi-product nozzles.

Claim 42. (New) The process according to claim 38, wherein the vapors of the metal precursor compounds are produced separately or jointly.

Claim 43. (New) The process according to claim 36, wherein the metal precursor compounds are halides, nitrates, organometallic compounds and/or metal powders of Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, Ba, Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Ti, Zr, Hf, V, Nb, Ta,

Cr, Mo, W, Mn, Fe, Co, Ni, Cu, Ag, Zn, Cd, Hg, B, Al, Ga, In, Te, Se, Tl, Si, Ge, Sn, Pb, P, As, Sb, Bi, Au, Pt, Rh, Pd, Pd, Ru, Ir, Ag, Hg, Os or Re.

Claim 44. (New) The process according to claim 36, wherein the solid composite metal oxide powder product is treated in a reducing atmosphere before or after purification.

Claim 45. (New) A method, comprising:

preparing a ceramic; a magnetic, electronic or optical component useful in data storage, a contrast agent in imaging processes, a material for polishing glass and metal surfaces, a catalyst or catalyst carrier, a function-imparting filler, a thickening agent, a flow auxiliary, a dispersion aid, a ferrofluid, a pigment or a coating material from the composite metal oxide powder of claim 23.

Claim 46. (New) A composite powder with a matrix domain structure as set forth in claim 23, that is prepared by a process comprising:

mixing precursor compounds of the oxides of a matrix oxide and oxides of domain metal oxides and noble metal in relative amounts that correspond to the ratio of metal oxides and noble metal in said desired composite metal oxide powder;

subjecting the combined metal precursor compounds to a gas mixture comprised of a combustible gas and oxygen to reaction in a reactor consisting of a combustion zone and a reaction zone;

cooling the hot gases and the solid product obtained; and

separating the solid composite metal oxide powder product having a volume-specific surface of 60 to 1200 m^2/cm^3 from the cooled gases.